

Claims

[1] In a metal tank with a synthetic resin sheet having a tank body made of a metal material, an inlet pipe and an overflow pipe communicating with an upper portion of the tank body respectively, an outlet pipe and a drain pipe communicating respectively with a lower portion of the tank body, and a ladder installed at an outer wall of the tank body, the metal tank is characterized by comprising:

the tank body constructed of a plurality of a first unit panels installed to form a bottom surface of the tank body, each of the first unit panels being made by stacking a synthetic resin sheet, a first metal plate, and a thermal insulation material in order, and a plurality of second unit panels installed to correspond to edges of the first unit panels and to form side surfaces and an upper surface of the tank body, each of the second unit panels being made by stacking the synthetic resin sheet, the first metal plate, the thermal insulation material, and a second metal plate in order;

a plurality of stay reinforcement members, respective both ends of which are installed at edges of the first unit panels and edges of the second unit panels constituting a ceil surface of the tank body;

a plurality of beam reinforcement members, respective both ends of which are installed at opposing edges of the second unit panels constituting the side surfaces of the tank body, the respective beam reinforcement member being partially welded to the respective stay reinforcement member; and

securing means provided to secure the corresponding edges of the adjacent unit panels to the outside wall of the tank body;

wherein the synthetic resin sheet is made of a polyethylene, and the first metal plate, the thermal insulation material, and the second metal plate are respectively made of a galvanized iron plate, a foamed urethane, and a painted color steel plate.

[2] The metal tank with a synthetic resin sheet according to claim 1, wherein the securing means comprises: an engaging reinforcement plate arranged at corners of the adjacent unit panels; a securing screw for penetrating and securing one side surface of the engaging reinforcement plate, each of the adjacent unit panels; and the other side surface of the engaging reinforcement plate in order; and a nut secured at an end of the securing screw.

[3] A unit panel with a synthetic resin sheet comprising:

an upper surface plate;

side surface plates, each of which is bent vertically from edges of the upper

surface plate and formed with a plurality of securing holes; and at least one tubular securing member provided to penetrate the upper surface plate so that an upper portion and a lower portion are exposed; wherein the plate is consisted of the first metal plate made of a painted color steel plate, a thermal insulation material made of a foamed urethane provided at one side of the first metal plate, and a foamed polyethylene synthetic resin sheet provided at an upper surface of the thermal insulation material and at edges of the first metal plate so that the thermal insulation material can be arranged between them.

[4] The unit panel with a synthetic resin sheet according to claim 3, wherein the upper surface of the securing member is hermetically sealed with the foamed polyethylene synthetic resin sheet.

[5] In a metal tank with a synthetic resin sheet having a tank body made of a metal material, an inlet pipe and an overflow pipe communicating with an upper portion of the tank body respectively, an outlet pipe and a drain pipe communicating respectively with a lower portion of the tank body, and a ladder installed at an outer wall of the tank body, the metal tank is characterized by comprising:
the tank body constructed of a plurality of a first unit panels installed to form a bottom surface of the tank body, each of the first unit panels being made by stacking a synthetic resin sheet, a first metal plate, and a thermal insulation material in order, and a plurality of second unit panels installed to correspond to edges of the first unit panels and to form side surfaces and an upper surface of the tank body, each of the second unit panels being made by stacking the synthetic resin sheet, the first metal plate, the thermal insulation material, and a second metal plate in order;
a plurality of stay reinforcement members, respective both ends of which are installed at edges of the first unit panels and edges of the second unit panels constituting a ceiling surface of the tank body;
a plurality of beam reinforcement members, respective both ends of which are installed at opposing edges of the second unit panels constituting the side surfaces of the tank body, the respective beam reinforcement member being partially welded to the respective stay reinforcement member; and
securing means having an engaging reinforcement plate arranged at corners of the adjacent unit panels and formed with engagement hole, a securing screw for penetrating the engagement hole of the engaging reinforcement plate, the securing member, and an engagement hole of the corresponding reinforcement member in order, and a nut secured at the penetrated end of the securing screw;

wherein the synthetic resin sheet is made of a foamed polyethylene, and the first metal plate, the thermal insulation material, and the second metal plate are respectively made of a galvanized iron plate, a foamed urethane, and a painted color steel plate.